Chemical/Biological Terrorism
September 2004

1: Am J Public Health. 2004 Jul;94(7):1096-102.
Ethical challenges in preparing for bioterrorism: barriers within the health care system.
Wynia MK, Gostin LO.
Institute for Ethics, American Medical Association, Chicago, IL 60610, USA. matthew_wynia@ama-assn.org
Preparedness for bioterrorism poses significant ethical challenges. Although public health ethics and preparedness have received attention recently, health care ethics must also be considered. In epidemics, the health care system assists public health in 3 tasks: detection, containment, and treatment. Detection might fail if all patients do not have access to care, or if physicians do not understand their obligation to report infectious diseases to public health authorities. Containment might fail if physicians view themselves only as advocates for individual patients, ignoring their social obligations as health professionals. Treatment might fail if physicians do not accept their
professional duty to treat patients during epidemics. Each of these potential ethical barriers to preparedness must be addressed by physicians and society.
Publication Types: Review Review, Tutorial
PMID: 15226126 [PubMed - indexed for MEDLINE]

2: Am J Public Health. 2004 Jul;94(7):1093-6.
Legal and public policy responses of states to bioterrorism.
Martin W.
The University of Chicago Law School, 1111 E 60th St, Chicago, IL 60637, USA. martinw@uchicago.edu
In late 2001, during the aftermath of the anthrax letter attacks, model legislation was proposed to relevant state agencies to update their states' public health laws to meet the threat of bioterrorism. This legislation was the Model State Emergency Health Powers Act. A concern underlying this and related efforts to address future bioterrorism threats was the perceived inadequacy of state laws to respond effectively when such threats occur. We evaluated how 4
states--Utah, Maine, South Dakota, and Indiana--addressed this concern in the context of the model legislation. The conclusion is that the model legislation generally served as an important catalyst for state action in the field of bioterrorism preparation.
PMID: 15226125 [PubMed - indexed for MEDLINE]

3: Anesthesiol Clin North America. 2004 Sep;22(3):XIII-XV.
Infectious disease and bioterrorism.

Hughes SC, Marks JD.
Departments of Anesthesia and Perioperative Care, University of California-San Francisco, Director of Obstetric Anesthesia San Francisco General Hospital, 1001 Potrero Avenue,
Room 3C-38, San Francisco, CA 94110, USA.
Publication Types: Editorial
PMID: 15325723 [PubMed - in process]

4: Anesthesiol Clin North America. 2004 Sep;22(3):XI-XII.
Infectious disease and bioterrorism.
Fleisher LA.
Departments of Anesthesia and Medicine, University of Pennsylvania School of Medicine, 3400 Spruce Street, Dulles 680, Philadelphia, PA 19104, USA.
Publication Types: Editorial
PMID: 15325722 [PubMed - in process]

5: Anesthesiol Clin North America. 2004 Sep;22(3):563-77.
Bioterrorism and children; Unique concerns with infection control and vaccination.
Leissner KB, Holzman RS, McCann ME.
Department of Anesthesiology, Perioperative and Pain Medicine, Children's Hospital Boston, 300 Longwood Avenue, Boston, MA 02115, USA.
PMID: 15325719 [PubMed - in process]

6: Ann Emerg Med. 2004 Mar;43(3):329-32.
Comment on: Ann Emerg Med. 2004 Mar;43(3):318-28.
Chinese curses, anthrax, and the risk of bioterrorism.
Schultz CH.
Publication Types: Comment Editorial
PMID: 14985658 [PubMed - indexed for MEDLINE]

7: Ann Neurol. 2004 Jul;56(1):1.
Message from the editor.
Johnson RT.
Publication Types: Editorial
PMID: 15236393 [PubMed - indexed for MEDLINE]

8: BMJ. 2004 Sep 4;329(7465):524-5.
Bioterrorism and compulsory vaccination.
Jefferson T.
Publication Types: Editorial
PMID: 15345604 [PubMed - in process]

9: Commun Dis Public Health. 2004 Jun;7(2):145-50.
Why, which, how, who, when? A personal view of smallpox vaccination for the 2000s.
Mortimer PP.
Health Protection Agency, Specialist and Reference Microbiology Division, Sexually Transmitted and Blood Borne Virus Laboratory, London.
philip.mortimer@hpa.org.uk
The uncertainty about the extent of proliferation of smallpox virus holdings since the early 1990s, and particularly whether terrorist groups or so-called rogue states might now hold the virus, confronts potential target countries with a continuing dilemma. An increasingly large majority of their populations have never been

vaccinated, and those who have been vaccinated may have become susceptible to smallpox again. Yet recent attempts by the United States and other governments to persuade large numbers of key personnel and others to accept vaccination have at least partially failed and a different long-term strategy is needed. This strategy should be based on surveillance of rash illnesses, improved public education, more refined contingency planning and a new approach to smallpox vaccination. The last should if possible be based on cell-grown, less reactogenic vaccines, even though it may be some years before these can become available. Meanwhile this article examines other expedients including the use of existing lymph vaccines.
Publication Types: Review Review, Tutorial
PMID: 15259419 [PubMed - indexed for MEDLINE]

10: Dermatol Clin. 2004 Jul;22(3):321-4, vii.
A call to arms-the role of the dermatologist as front line responder.
Maurer T.
Department of Dermatology, University of California-San Francisco, San Francisco General Hospital, 1001 Potrero Avenue, Building 90, Ward 92, #224, San Francisco, CA 94110, USA. tmaurer@itsa.ucsf.edu
As the risk of bioterrorism becomes an increasingly significant issue in the United States and the world, dermatologists have found themselves as partners or front line participants in the effort to prepare for and respond to such a threat. In what was previously an unfamiliar part of practice for most dermatologists, bioterrorism has required that providers familiarize themselves
with the pathophysiology, clinical presentation, diagnosis,and management of diseases from agents that could potentially be used.
Publication Types: Review Review, Tutoria
PMID: 15207313 [PubMed - indexed for MEDLINE]

11: Dermatol Clin. 2004 Jul;22(3):313-20, vi-vii.
Tularemia: the disease and the weapon.
Cronquist SD.
Department of Dermatology, Naval Hospital Great Lakes, 3001A Sixth Street, Great Lakes, IL 60088, USA. sdcronquist@NHGL.med.navy.mil
Tularemia is a bacterial infection usually transmitted via arthropod vectors or direct contact with infected animals. Naturally occurring cases are relatively rare, and can result in six different clinical syndromes. Tularemia is also a potential agent of bioterrorism or biowarfare, and is categorized as a high-level threat. Effective antibiotic treatment is available, including
potential use of oral antibiotics in a mass casualty situation. An awareness of potential clinical presentations of tularemia will facilitate timely intervention,appropriate diagnostic testing, and decreased morbidity in the event of a biologic attack with Francisella tularensis.
Publication Types: Review Review, Tutorial
PMID: 15207312 [PubMed - indexed for MEDLINE]

12: Dermatol Clin. 2004 Jul;22(3):303-12, vi.
Plague.
Cobbs CG, Chansolme DH.
Division of Infectious Disases, Department of Medicine, School of Medicine, University of Alabama at Birmingham, THT 229, 1530 3rd Avenue South, Birmingham, AL 35294, USA. gcobbs@uab.edu
Plague is a disease that has been present for thousands of years and described since the earliest medical accounts. It occurs today worldwide, and may present in a

variety of clinical forms. Bubonic disease, pneumonic plague, and septicemic plague are seen in addition to a number of other less common manifestations. As an agent of bioterrorism,Yersinia pestis could pose an
extreme threat if released in the appropriate form and in the appropriate environment. Presumptive diagnosis may be made with readily available techniques, but laboratory handling of specimens requires special care. When there is a strong suspicion of plague, treatment should be instituted immediately, as delaying therapy will result in increased morbidity and mortality.
Publication Types: Review Review, Tutorial
PMID: 15207311 [PubMed - indexed for MEDLINE]

13: Dermatol Clin. 2004 Jul;22(3):291-302, vi.
Other viral bioweapons: Ebola and Marburg hemorrhagic fever.
Salvaggio MR, Baddley JW.
Division of Infectious Diseases, Department of Medicine, University of Alabama at Birmingham, 1900 University Boulevard, 229 Tinsley Harrison Tower, Birmingham, AL 35294, USA.
The term viral hemorrhagic fever refers to a clinical syndrome characterized by acute onset of fever accompanied by nonspecific findings of malaise, prostration, diarrhea,and headache. Patients frequently show signs of increased vascular permeability, and many develop bleeding diatheses. The hemorrhagic fever viruses represent potential agents for biologic warfare because of capability of aerosol transmission, high morbidity,and mortality associated with infection, and ability to replicate in cell culture in high concentrations. Herein we discuss the Filoviridae, the agents of Ebola and Marburg hemorrhagic fevers.
Publication Types: Review Review, Tutorial
PMID: 15207310 [PubMed - indexed for MEDLINE]

14: Dermatol Clin. 2004 Jul;22(3):263-74, vi.
Smallpox: the basics.
Slifka MK, Hanifin JM.
Vaccine and Gene Therapy Institute, Oregon Health & Science University, 505 NW 185(th) Avenue, Beaverton, OR 97006-3448, USA.
Variola major is the causative agent of smallpox, a severe disease that was arguably one of the most serious human pathogens in recorded history. Humans are the only known reservoir of variola major; no known animal or insect reservoirs have been identified. Thus, after eradication of smallpox through a global immunization effort, this incredibly lethal scourge was eliminated from all corners of the globe. Despite the total eradication of naturally occurring
smallpox, there are still stockpiles of smallpox virus maintained in the United States and the former Soviet Union. Unfortunately, it is impossible to know if all smallpox stocks have been accounted for or whether unknown or unreported stocks of smallpox may still exist. In the age of genetic engineering, these viruses could theoretically be modified to increase their virulence to the levels associated with smallpox itself.
Publication Types: Review Review, Tutorial
PMID: 15207308 [PubMed - indexed for MEDLINE]

15: Dermatol Clin. 2004 Jul;22(3):257-62, v.
Other biologic toxin bioweapons: ricin, staphylococcal enterotoxin B, and trichothecene mycotoxins.
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The ideal biologic warfare agent is lethal, easy, and inexpensive to produce in large quantities, stable in aerosol for/with the ability to be dispersed over wide areas, has no effective treatment or vaccine, and is communicable from person to person. With the exception of the last characteristic, the biologic toxins (ricin, staphylococcal enterotoxin B, T-2 mycotoxin, and botulinum) possess all the properties mentioned. This article will discuss the first three biologic toxins, with an emphasis on particular points of interest to the dermatologist. Botulinum toxin will be covered in another article.
Publication Types: Review Review, Tutorial
PMID: 15207307 [PubMed - indexed for MEDLINE]

16: Dermatol Clin. 2004 Jul;22(3):247-56, v.
Anthrax.
Wenner KA, Kenner JR.
Family Practice, Reynolds Army Community Hospital, 10 Briarcreek Drive, Fort Sill, OK 73505, USA.
Anthrax is an ancient disease associated with the plagues in biblical Egypt and modern bioterrorism. Three clinical syndromes result from exposure to anthrax spores: cutaneous,inhalational, and gastrointestinal. Cutaneous anthrax is the most common naturally occurring syndrome; inhalational anthrax is most likely to result from airborne release of spores. Prophylactic and early treatment can improve the mortality from inhalational anthrax. A vaccine is available, but has many limitations. New vaccines are currently being developed.
Publication Types: Review Review, Tutorial
PMID: 15207306 [PubMed - indexed for MEDLINE]

17: Dermatol Clin. 2004 Jul;22(3):231-46, v.
The history of biologic warfare and bioterrorism.
Jacobs MK.
Department of Dermatology, University of Alabama at Birmingham School of Medicine, 1530 3rd Avenue South, EFH 414, Birmingham, AL 35294, USA. mj@alumni.duke.edu
Biologic weapons have been used since ancient times in war, and, more recently, by terrorists. From the catapulting of plague corpses over city walls in the Middle Ages to the bacterial contamination of salad bars in Oregon in 1984 by the Rajneeshee cult, the long history of biologic weapons use underscores their current threat. In preparing for the threat of biologic weapons, health care professionals should not only be familiar with the clinical presentation and
pathophysiology of the diseases they produce, but also with the historic context of their past uses.

Publication Types: Historical Article
PMID: 15207305 [PubMed - indexed for MEDLINE]

18: Developing World Bioeth. 2004 May;4(1):1-16.
Are there characteristics of infectious diseases that raise special ethical issues?
Smith CB, Battin MP, Jacobson JA, Francis LP, Botkin JR, Asplund EP, Domek GJ, Hawkins B.
Division of Medical Ethics, University of Utah, Salt Lake City, Utah 84112 USA. battin@utah.edu

This paper examines the characteristics of infectious diseases that raise special medical and social ethical issues, and explores ways of integrating both current bioethical and classical public health ethics concerns. Many of the ethical issues raised by infectious diseases are related to these diseases' powerful ability to engender fear in individuals and panic in populations. We address the association of some infectious diseases with high morbidity and mortality rates, the sense that infectious diseases are caused by invasion or attack on humans by foreign micro-organisms, the acute onset and rapid course of many infectious diseases, and, in particular, the communicability of infectious diseases. The individual fear and community panic associated with infectious diseases often leads to rapid, emotionally driven decision making about public health policies needed to protect the community that may be in conflict with current bioethical principles regarding the care of individual patients. The discussion includes recent examples where dialogue between public health practitioners and medical-ethicists has helped resolve ethical issues that require us to consider the infected patient as both a victim with individual needs and rights and as a potential vector of disease that is of concern to the community.
PMID: 15086371 [PubMed - indexed for MEDLINE]

19: Diagn Microbiol Infect Dis. 2004 Aug;49(4):295-7.
Non-o1 Vibrio cholerae septicemia: Case report, discussion of literature, and relevance to bioterrorism.
Anderson AM, Varkey JB, Petti CA, Liddle RA, Frothingham R, Woods CW.
Department of Medicine, Durham Veterans Affairs Medical Center, Durham, NC, USA.
Non-O1 Vibrio cholerae (NOVC) is a rare cause of septicemia in the United States. We report a case of NOVC septicemia and discuss the literature pertaining to this organism. NOVC takes on new significance given that it can be confused with toxigenic V. cholerae, a Centers for Disease Control andPrevention category B bioterrorism agent.
PMID: 15313536 [PubMed - in process]

20: Environ Health Perspect. 2004 Jun;112(8):A465.
Japan's toxic past resurfaces.
Taylor DA.
Publication Types: News
PMID: 15181889 [PubMed - indexed for MEDLINE]

21: Eur Respir J. 2004 Feb;23(2):343-6.
Chronic bronchiolitis in a 5-yr-old child after exposure to sulphur mustard gas.
Dompeling E, Jobsis Q, Vandevijver NM, Wesseling G, Hendriks H.
Dept of Paediatric Pulmonology, University Hospital Maastricht, The Netherlands. edom@paed.azm.nl
Exposure to sulphur mustard (SM) gas may have extensive immediate effects on the respiratory system. However, long-term effects are far less known. This case report describes a Kurdish male child who was exposed to SM gas during a chemical attack in Iraq at 5 yrs of age. In the acute phase, the child developed severe respiratory symptoms with a chemical pneumonia. Extensive burning of the skin occurred. In the course of 10 yrs, lung function deteriorated progressively to a forced expiratory volume in one second of 30% of predicted value. Severe

air-trapping occurred. The lung function abnormalities were not reversed by treatment with corticosteroids or bronchodilators. Infectious exacerbations of the child's lung disease occurred. High resolution computed tomography scan showed multiple bronchiectasis. The histological picture of an open lung biopsy was best described as a "chronic bronchiolitis".
Publication Types: Case Reports
PMID: 14979514 [PubMed - indexed for MEDLINE]

22: J Am Osteopath Assoc. 2004 Jun;104(6):240-3.
Initial experience with mass immunization as a bioterrorism countermeasure.
Folio LR, Lahti RL, Cockrum DS, Bills S, Younker MR.
David Grant Medical Center, Travis Air Force Base, Calif, USA.
Anthrax vaccine was administered to approximately 5000 individuals at a deployed location near Iraq in a 1-week period. This report describes the planning and administrative process to initiate such a program, with a snapshot view of the first week of immunization. Compliance with this program was important to best protect troops in this high-threat region. The authors share their experience and detail the process of handling refusals, as these are most likely to reveal themselves at the beginning of an immunization program. The program resulted in a compliance rate of 98%. With increased terrorist threats and widespread availability of biologic agents of mass destruction, experiences with such immunization programs should be described in the literature and analyzed in anticipation of similar programs in the future.
PMID: 15233330 [PubMed - indexed for MEDLINE]

23: J Crit Care. 2004 Mar;19(1):36-41.
Application of a cuirass and institution of biphasic extra-thoracic ventilation by gear-protected physicians.
Ben-Abraham R, Gur I, Bar-Yishay E, Lin G, Blumenfeld A, Kalmovich B, Weinbroum AA.
Department of Anesthesiology, Tel Aviv Sourasky Medical Center, Tel Aviv University, Israel.
OBJECTIVES: To evaluate the speed by which cuirass application, followed by biphasic extra-thoracic ventilation, can be instituted by full anti-chemical protective gear-wearing physicians. MATERIALS AND METHODS: Ten physicians of variable subspecialties applied a cuirass on an adult volunteer and instituted biphasic extra-thoracic ventilation, using the RTX respirator (Medivent, London, UK). Endotracheal (ET) intubation and manual ventilation of a mannequin and its ventilation was comparatively assessed. Performances were conducted in a prospective, crossover, randomized manner. Times to successful applications as well as failure rates were recorded. RESULTS: Cuirass application was performed more rapidly (102 +/- 9 s, 177 +/- 31 s, respectively, P <.01) and with a slightly lower failure rate than ET intubation. CONCLUSIONS: Physicians wearing full anti-chemical protective gear applied the cuirass and instituted biphasic extra-thoracic ventilation faster than ET intubation and manual positive pressure ventilation. Extra-thoracic ventilation should be further evaluated as an option for emergent respiratory support during toxic mass casualty events.
Publication Types: Clinical Trial Randomized Controlled Trial
PMID: 15101004 [PubMed - indexed for MEDLINE]

24: J Healthc Manag. 2004 Jul-Aug;49(4):227-35.
After 9/11: priority focus areas for bioterrorism preparedness in hospitals.
Murphy JK.

James Madison University, Harrisonburg, Virginia, USA. murphyjk2@hotmail.com
Following the terrorist attacks of September 11, 2001, bioterrorism preparedness was a priority in hospitals, but it did not remain a priority. As a result, hospitals are still unprepared to deal with the effects of a bioterrorist attack. The government has provided initial funding to state and local
governments for bioterrorism preparedness; however, much of this money has yet to reach hospitals. With the inadequate funding available to hospitals, four initial measures must be focused on. These focus areas are community involvement, hospital staff education, information technology and disease surveillance improvement, and additional equipment and staff acquisition. Hospitals should also make bioterrorism-preparedness planning a regional effort.
PMID: 15328657 [PubMed - in process]

25: J Infect Dis. 2004 Oct 1;190(7):1228-36. Epub 2004 Aug 30.
Immune Responses to Bacillus anthracis Protective Antigen in Patients with Bioterrorism-Related Cutaneous or Inhalation Anthrax.
Quinn CP, Dull PM, Semenova V, Li H, Crotty S, Taylor TH, Steward-Clark E, Stamey KL, Schmidt DS, Stinson KW, Freeman AE, Elie CM, Martin SK, Greene C, Aubert RD, Glidewell J, Perkins BA, Ahmed R, Stephens DS.
Division of Bacterial and Mycotic Diseases, National Center for Infectious Diseases, Centers for Disease Control and Prevention, Atlanta, Georgia, USA. cquinn@cdc.gov.
Anti-protective antigen (PA) immunoglobulin (Ig) G, toxin neutralization, and PA-specific IgG memory B cell responses were studied in patients with bioterrorism-related cutaneous or inhalation anthrax and in a patient with laboratory-acquired cutaneous anthrax. Responses were determined for >1 year after the onset of symptoms. Eleven days after the onset of symptoms (15 days after likely exposure), anti-PA IgG was detected in 16 of 17 patients with
confirmed or suspected clinical anthrax who were tested. Anti-PA IgG remained detectable 8-16 months after the onset of symptoms in all 6 survivors of inhalation anthrax and in 7 of 11 survivors of cutaneous anthrax who were tested. Anti-PA IgG levels and serum toxin neutralizing activity were strongly associated ($R^2=0.83$). PA-specific IgG memory B cells were detectable in all 6 survivors of inhalation anthrax but in only 2 of 7 patients with cutaneous anthrax who were tested. Anti-PA IgG is an important diagnostic marker of anthrax, a predictor of serum anti-toxin activity, and a marker of immunological memory against anthrax.
PMID: 15346332 [PubMed - in process]

26: J Nurs Educ. 2004 Aug;43(8):362-7.
Integrating bioterrorism education into nursing school curricula.
Steed CJ, Howe LA, Pruitt RH, Sherrill WW.
Greenville Hospital System, Spartanburg, USA.
Due to the events of September 11, 2001 and the bioterrorism-related anthrax episodes, the United States has escalated efforts to better prepare the nation for terrorist attacks. Early recognition and management of a biological attack are largely dependent on the clinical expertise of frontline health care personnel. Nurses are recognized as an integral part of this team. Schools of nursing should integrate bioterrorism education into their curricula to address
this growing frontier of health care management. This article outlines the necessary components of bioterrorism education for nurses, reviews examples of available resources to facilitate its inclusion, and suggests ways to integrate this material into nursing curricula.

PMID: 15344372 [PubMed - in process]

27: J Pak Med Assoc. 2004 Apr;54(4):206-13.
Chemical and biological warfare preparing to meet the threat.
Sophie S, Haq SU, Khan MR.
Department of Anesthesiology, The Aga Khan University Hospital, Karachi.
Publication Types: Review Review, Tutorial
PMID: 15242000 [PubMed - indexed for MEDLINE]

28: J Public Health Manag Pract. 2004 Jul-Aug;10(4):290-8.
Critical issues in bioterrorism preparedness: before and after September 2001.
Brannen DE, Stanley SA.
Community Epidemiologist, Greene, Clinton, and Fayette Counties, Greene County Combined Health District, 360 Wilson Drive, Xenia, OH 45385, USA. dbrannen@gcchd.org
The Bioterrorism Preparedness and Response Survey (BPRS) was a survey of Ohio local health departments' capacity to respond to bioterrorism. Soon after completion of the BPRS, the events of September 11 occurred, followed by the human cases of anthrax. The Ohio Response to Bioterrorism 2001 Survey (ORB) identified bioterrorism preparedness issues related to the suspected anthrax incidents. The BPRS measured capacity before September 11, 2001, and the ORB measured Ohio communities' response to white powder incidents. The BPRS and ORB provided independent and outcome measures related to the 2001-bioterrorism events. The significant bioterrorism response issues were: monitoring critical or unexplained deaths and clusters or symptoms; training on bioterrorism agents; integration of medical and criminal investigations of bioterrorism incidents; development of bioterrorism emergency response plans to include agencies to be contacted, management strategies for implementing mass vaccination, prophylaxis, treatment distribution and administration; and participation in a bioterrorism field or tabletop exercise. These results are confirmed and extended by studies by the US General Accounting Office, the Rand Corporation, Trust in the Future of America's Health foundation, and a follow-up survey of issues during a simulated covert smallpox attack.
PMID: 15235375 [PubMed - indexed for MEDLINE]

29: J Public Health Manag Pract. 2004 Jul-Aug;10(4):282-9.
Bioterrorism risk perceptions and educational needs of public health professionals before and after September 11, 2001: a national needs assessment survey.
Shadel BN, Chen JJ, Newkirk RW, Lawrence SJ, Clements B, Evans RG.
Centers for the Study of Bioterrorism and Emerging Infections, School of Public Health, Saint Louis University, 3545 Lafayette Avenue, Suite 355, St. Louis, MO 63104, USA. shadebn@slu.edu
The study objectives were to compare local public health professionals' bioterrorism risk perceptions, the extent of bioterrorism preparedness training, and to describe preferred methods for delivery of preparedness education in the United States. National needs assessments were conducted via a mailed survey to 3,074 local public health departments in October 2000 and November 2001. Compared to a survey conducted in October 2000, the perceived risk of a bioterrorism attack in the United States increased dramatically after September 11 ($p < 0.0001$); however, 57% of respondents believed one was unlikely to occur within their own community. Public health professionals perceive their own communities to be at low risk for a bioterrorism event. Ongoing, updated, standardized bioterrorism preparedness education is needed.
PMID: 15235374 [PubMed - indexed for MEDLINE]

30: J R Army Med Corps. 2004 Mar;150(1):14-9.
Clinical findings in 111 ex-Porton Down volunteers.
Lee HA, Gabriel R, Bale AJ, Welch D.
Baird Health Centre, Gassiot House, St Thomas' Hospital, London.
map@gstt.sthames.nhs.uk
OBJECTIVE: To determine whether the health of Porton Down volunteers (PDV) has suffered as a result of their participation in medical trials, during which they were exposed to single low dose concentrations of chemical warfare agents. METHODS: Data were obtained from a self-selected series of ex-Porton Down volunteers who attended the MOD's Porton Down Volunteers' Medical Assessment Programme (PDVMAP). One hundred and eleven men attended with a mean age of 62 (range 37-81) years. Information obtained was analysed to determine whether clinical diagnoses and symptoms reported had any relationship to chemical exposures. RESULTS: The diagnoses were not unusual for UK nationals with a mean age of 62 years. The majority of volunteers went to Porton Down in the 1950s and then had a mean age of 19. The mean time between volunteers attending Porton Down and coming to MAP was 42 years. We found no correlation between chemical exposures and later development of established diagnoses, a latent period of 30 years. CONCLUSION: On a clinical basis, no evidence was found to support the hypothesis that participation in Porton Down trials produced any long-term adverse health effects or unusual patterns of disease compared to those of the general population of the same age.
PMID: 15149006 [PubMed - indexed for MEDLINE]

31: J R Army Med Corps. 2004 Mar;150(1):3-9.
The psychological dimension of chemical, biological, radiological and nuclear (CBRN) terrorism.
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ianpalmer@doctors.org.uk
Terrorism is an increasing feature of the World Scene. In the UK, our perspective has changed from a largely Ireland focused one to a more international view. The United States of America are, for the first time, seen as major terrorist targets. We are now "at war with terrorism". The medical aspects of terrorism have been extensively discussed in this journal and elsewhere, this article specifically addresses the psychological consequences of the use of terror weapons.
Publication Types: Review Review, Tutorial
PMID: 15149004 [PubMed - indexed for MEDLINE]

32: Lancet. 2004 Jul 31;364(9432):449-52.
Comment in: Lancet. 2004 Jul 31;364(9432):393-5.
Clinical predictors of bioterrorism-related inhalational anthrax.
Kyriacou DN, Stein AC, Yarnold PR, Courtney DM, Nelson RR, Noskin GA, Handler JA, Frerichs RR.
Department of Emergency Medicine, Northwestern University Feinberg School of Medicine, Chicago, IL, USA. dkyriacou@aol.com
Limitation of a bioterrorist anthrax attack will require rapid and accurate recognition of the earliest victims. To identify clinical characteristics of inhalational anthrax, we compared 47 historical cases (including 11 cases of bioterrorism-related anthrax) with 376 controls with community-acquired pneumonia or influenza-like illness. Nausea, vomiting, pallor or cyanosis,

diaphoresis, altered mental status, and raised haematocrit were more frequently recorded in the inhalational anthrax cases than in either the community-acquired pneumonia or influenza-like illness controls. The most accurate predictor of anthrax was mediastinal widening or pleural effusion on a chest radiograph. This finding was 100% sensitive (95% CI 84.6-100.0) for inhalational anthrax, 71.8% specific (64.8-78.1) compared with community-acquired pneumonia, and 95.6% specific (90.0-98.5) compared with influenza-like illness. Our findings represent preliminary efforts toward identifying clinical predictors of inhalational anthrax.
PMID: 15288744 [PubMed - indexed for MEDLINE]

33: Lancet. 2004 Jul 31;364(9432):393-5.
Comment on: Lancet. 2004 Jul 31;364(9432):449-52.
Anthrax and bioterrorism: are we prepared?
Mogridge J.
Laboratory Medicine and Pathobiology, Medical Sciences Building, University of Toronto, Toronto, Ontario M5S 1A8, Canada. jeremy.mogridge@utoronto.ca
Publication Types: Comment
PMID: 15288719 [PubMed - indexed for MEDLINE]

34: Lancet Infect Dis. 2004 Aug;4(8):483-4.
SARS, emerging infections, and bioterrorism preparedness.
Weber SG, Bottei E, Cook R, O'Connor M.
Section of Infectious Diseases, Department of Medicine, University of Chicago Hospitals, Chicago, IL 60637, USA. sgweber@medicine.bsd.uchicago.edu
PMID: 15288816 [PubMed - indexed for MEDLINE]

35: Med Microbiol Immunol (Berl). 2004 Sep 2 [Epub ahead of print]
Bioterrorism: is it a real threat?
Gottschalk R, Preiser W.
Center of Competence for Highly Infectious Diseases, Hesse, Germany.
The Geneva Protocol of 1925 commits the signatory nations to refraining from the use of biological weapons. However, the terrorist assaults of September 2001 and, subsequently, the anthrax-containing letters are cause for great concerns: new threats to the security of nations are expected, as terrorist organizations seem to increasingly explore novel ways of spreading terror.In this context, naturally emerging diseases such as SARS, monkeypox or West Nile fever assume new importance because it is difficult to distinguish between natural epidemics and possible bioweapon assaults. Great efforts on the part of governments and public health authorities are necessary to counteract these threats.
PMID: 15349775 [PubMed - as supplied by publisher]

36: Milbank Q. 2004 Sep;82(3):413-455.
Emotional and Behavioral Consequences of Bioterrorism: Planning a Public Health Response.
Stein BD, Tanielian TL, Eisenman DP, Keyser DJ, Burnam MA, Pincus HA.
RAND Corporation; University of Southern California; University of California, Los Angeles.
Millions of dollars have been spent improving the public health system's bioterrorism response capabilities. Yet relatively little attention has been paid to precisely how the public will respond to bioterrorism and how emotional and behavioral responses might complicate an otherwise successful response. This article synthesizes the available evidence about the likely emotional and behavioral consequences of bioterrorism to suggest what decision makers can do

now to improve that response. It examines the emotional and behavioral impact of previous "bioterrorism-like" events and summarizes interviews with experts who have responded to such events or conducted research on the effects of communitywide disasters. The article concludes by reflecting on the evidence and experts' perspectives to suggest actions to be taken now and future policy and research priorities.
PMID: 15330972 [PubMed - as supplied by publisher]

37: Mod Healthc. 2004 Jul 19;34(29):18-9.
Long wait almost over. Project Bioshield measure nears final approval.
Fong T.
Publication Types: News
PMID: 15301143 [PubMed - indexed for MEDLINE]

38: N J Med. 2002 Jan-Feb;99(1-2):21-2.
Bioterrorism threat tests New Jersey's public health readiness.
Codey RJ.
PMID: 15211890 [PubMed - indexed for MEDLINE]

39: Neurology. 2004 May 11;62(9):1590-6.
The birth of nerve agent warfare: lessons from Syed Abbas Foroutan.
Newmark J.
Chemical Casualty Care Division, US Army Medical Research Institute of Chemical Defense, Aberdeen Proving Ground, MD, USA.
The author reviewed Farsi-language articles published recently by Dr. Syed Abbas Foroutan, which constitute the only firsthand clinical descriptions of battlefield nerve agent casualties in the world literature, and the author compares his comments with US and North Atlantic Treaty Organization (NATO) chemical casualty care doctrine. Foroutan's lessons learned reassure us that a robust medical evacuation system, coupled with timely and appropriate medical care of nerve agent poisoning, will save many more lives on future battlefields.
Publication Types: Historical Article
PMID: 15136687 [PubMed - indexed for MEDLINE]

40: Occup Environ Med. 2004 Aug;61(8):703-8.
Determination of serum IgG antibodies to Bacillus anthracis protective antigen in environmental sampling workers using a fluorescent covalent microsphere immunoassay.
Biagini RE, Sammons DL, Smith JP, Page EH, Snawder JE, Striley CA, MacKenzie BA.
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AIMS: To evaluate potential exposure to Bacillis anthracis (Ba) spores in sampling/decontamination workers in the aftermath of an anthrax terror attack.
METHODS: Fifty six serum samples were obtained from workers involved in environmental sampling for Ba spores at the American Media, Inc. (AMI) building in Boca Raton, FL after the anthrax attack there in October 2001. Nineteen sera were drawn from individuals both pre-entry and several weeks after entrance into the building. Nine sera each were drawn from unique individuals at the pre-entry and follow up blood draws. Thirteen donor control sera were also evaluated. Individuals were surveyed for Ba exposure by measurement of serum Ba

anti-protective antigen (PA) specific IgG antibodies using a newly developed fluorescent covalent microsphere immunoassay (FCMIA). RESULTS: Four sera gave positive anti-PA IgG results (defined as anti-PA IgG concentrations > or = the mean microg/ml anti-PA IgG from donor control sera (n = 13 plus 2 SD which were also inhibited > or = 85% when the serum was pre-adsorbed with PA). The positive sera were the pre-entry and follow up samples of two workers who had received their last dose of anthrax vaccine in 2000. CONCLUSION: It appears that the sampling/decontamination workers of the present study either had insufficient exposure to Ba spores to cause the production of anti-PA IgG antibodies or they were exposed to anthrax spores without producing antibody. The FCMIA appears to be a fast, sensitive, accurate, and precise method for the measurement of anti-PA IgG antibodies.
PMID: 15258278 [PubMed - indexed for MEDLINE]

41: Policy Anal Brief W Ser. 2004 Apr;(4):1-6.
Perspectives of rural hospitals on bioterrorism preparedness planning.
Schur CL, Berk ML, Mueller CD.
Even the smallest, most isolated rural hospitals are now required to have bioterrorism preparedness plans. From the perspective of many rural hospitals, however, there is a disparity between Federal expectations and the realities of small hospitals operating in geographically isolated communities. As part of an effort to better understand how to close this gap, the Walsh Center for Rural Health Analysis convened a panel of representatives of rural hospitals who are responsible for bioterrorism preparedness in their hospitals. Perspectives of rural hospitals on various aspects of preparedness were discussed, in terms of workforce and training, physical capacity and supplies, communication, and coordination with other entities. All of the participants noted the tremendous progress that has been made in the past two years, but also the distance they each need to go. Some of the issues raised by the panelists included the dual benefit of efforts to increase capacity at rural hospitals, the inapplicability of many federal guidelines and directives for small hospitals because of size and less sophisticated infrastructure, the burden of geographic isolation relative to obtaining training and information, and the fragmentation of funding and directives at both the state and federal levels.
PMID: 15295832 [PubMed - indexed for MEDLINE]

42: Prehospital Disaster Med. 2003 Oct-Dec;18(4):321-6.
Vaccine administration by paramedics: a model for bioterrorism and disaster response preparation.
Walz BJ, Bissell RA, Maguire B, Judge JA 2nd.
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The events of 11 September 2001 have had a profound effect on disaster planning efforts in the United States. This is true especially in the area of bioterrorism. One of the major tenets of bioterrorism response is the vaccination of at-risk populations. This paper investigates the efficacy of training emergency medical services paramedics to administer vaccines in public health settings as preparation for and response to bioterrorism events and other disaster events. The concept of vaccination administration by specially trained paramedics is not new. Various programs to provide immunizations for emergency services personnel and at-risk civilian populations have been reported.

Vaccination programs by paramedics should follow the guidelines of the National Vaccine Advisory Committee of the Centers for Disease Control and Prevention (CDC). This paper compares the seven standards of the CDC guidelines to routine paramedic practice and education. It is concluded that paramedics are adequately trained to administer vaccines. However, specific training and protocols are needed in the areas of administrative paperwork and patient education. A proposed outline for a paramedic-training program is presented.
PMID: 15310044 [PubMed - indexed for MEDLINE]

43: Prehospital Disaster Med. 2003 Oct-Dec;18(4):313-20.
Standardized emergency management system and response to a smallpox emergency.
Kim-Farley RJ, Celentano JT, Gunter C, Jones JW, Stone RA, Aller RD, Mascola L, Grigsby SF, Fielding JE.
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The smallpox virus is a high-priority, Category-A agent that poses a global, terrorism security risk because it: (1) easily can be disseminated and transmitted from person to person; (2) results in high mortality rates and has the potential for a major public health impact; (3) might cause public panic and social disruption; and (4) requires special action for public health preparedness. In recognition of this risk, the Los Angeles County Department of Health Services (LAC-DHS) developed the Smallpox Preparedness, Response, and Recovery Plan for LAC to prepare for the possibility of an outbreak of smallpox. A unique feature of the LAC-DHS plan is its explicit use of the Standardized Emergency Management System (SEMS) framework for detailing the functions needed
to respond to a smallpox emergency. The SEMS includes the Incident Command System (ICS) structure (management, operations, planning/intelligence, logistics, and finance/administration), the mutual-aid system, and the multi/interagency coordination required during a smallpox emergency. Management for incident command includes setting objectives and priorities, information (risk communications), safety, and liaison. Operations includes control and containment of a smallpox outbreak including ring vaccination, mass vaccination, adverse events monitoring and assessment, management of confirmed and suspected
smallpox cases, contact tracing, active surveillance teams and enhanced hospital-based surveillance, and decontamination. Planning/intelligence functions include developing the incident action plan, epidemiological investigation and analysis of smallpox cases, and epidemiological assessment of the vaccination coverage status of populations at risk. Logistics functions include receiving, handling, inventorying, and distributing smallpox vaccine and vaccination clinic supplies; personnel; transportation; communications; and health care of personnel. Finally, finance/administration functions include monitoring costs related to the smallpox emergency, procurement, and administrative aspects that are not handled by other functional divisions of incident command systems. The plan was developed and is under frequent review by the LAC-DHS Smallpox Planning Working Group, and is reviewed periodically by the LAC Bioterrorism Advisory Committee, and draws upon the Smallpox Response Plan and Guidelines of the Centers for Disease Control and Prevention (CDC) and recommendations of the Advisory Committee on Immunization Practices (ACIP). The Smallpox Preparedness, Response, and Recovery Plan, with its SEMS framework and

ICS structure, now is serving as a model for the development of LAC-DHS plans for responses to other terrorist or natural-outbreak responses.
PMID: 15310043 [PubMed - indexed for MEDLINE]

44: Prehospital Disaster Med. 2003 Oct-Dec;18(4):306-12.
The threat of mid-spectrum chemical warfare agents.
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There is a spectrum of several threat agents, ranging from nerve agents and mustard agents to natural substances, such as biotoxins and new, synthetic, bioactive molecules produced by the chemical industry, to the classical biological warfare agents. The new, emerging threat agents are biotoxins produced by animals, plants, fungi, and bacteria. Examples of such biotoxins are botulinum toxin, tetanus toxin, and ricin. Several bioactive molecules produced by the pharmaceutical industry can be even more toxic than are the classical chemical warfare agents. Such new agents, like the biotoxins and bioregulators, often are called mid-spectrum agents. The threat to humans from agents developed by modern chemical synthesis and by genetic engineering also must be considered, since such agents may be more toxic or more effective in causing death or incapacitation than classical warfare agents. By developing effective medical protection and treatment against the most likely chemical and mid-spectrum threat agents, the effects of such agents in a war scenario or following a terrorist attack can be reduced.
Publication Types: Review Review, Tutorial
PMID: 15310042 [PubMed - indexed for MEDLINE]

45: Public Health Rep. 2004 Sep-Oct;119(5):458-63.
Contacting passengers after exposure to measles on an international flight: Implications for responding to new disease threats and bioterrorism.
Lasher LE, Ayers TL, Amornkul PN, Nakatab MN, Effler PV.
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On May 21, 2000, a passenger with measles traveled from Japan to Hawai'i on a seven-hour flight. When the flight landed, the U.S. Public Health Service (USPHS) Quarantine Station in Honolulu alerted passengers that a suspected case of measles had been identified, but they were not detained. The next day, to offer appropriate post-exposure prophylaxis, the Hawai'i Department of Health (HDOH) attempted to contact all passengers from the flight using information from the airline, U.S. Customs declaration forms, and tour agencies. Of 335 total passengers, 270 (81%) were successfully reached and provided complete information. The mean time from exposure to contact for all respondents was 61 hours (95% confidence interval 57, 66). A total of 202 (75%) of the responding passengers were contacted within 72 hours after exposure, the time period during which administration of measles vaccine would have provided protection for susceptible individuals. The time-to-contact was significantly longer for passengers who did not stay in hotels than for hotel guests. Customs forms proved to be of limited utility in contacting international travelers. This experience highlights the need for more complete and timely methods of contacting passengers potentially exposed to infectious agents aboard flights.
PMID: 15313108 [PubMed - in process]

46: Rep Carcinog. 2002;10:160-1.

Mustard gas.
National Toxicology Program.
PMID: 15326681 [PubMed - indexed for MEDLINE]

47: Risk Anal. 2004 Jun;24(3):521-36.
The potential of next-generation microbiological diagnostics to improve bioterrorism detection speed.
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Emerging, rapid, multivalent, microbial diagnostic technologies can produce results in hours, as contrasted to the standard methods that require at least the better part of a week. Used in bioterrorism surveillance in medical settings, the new biodetectors could significantly reduce the time between a covert attack and its detection. By how much is determined by the intensity of sampling. If used to screen all patients reporting flu-like symptoms to their doctors, this basic level of "front-line" sampling would reduce life-threatening medical floundering and missteps and give responders 3-5 days of warning that they otherwise would not have had. Being miniaturized and amenable to mass production, these devices could reduce the cost of screening to a fraction of current costs and so it is tempting to imagine their use in more intensive bioterrorism screening programs aimed at the apparently healthy population, programs that could detect a covert attack even before the victims felt ill. This article examines the tradeoffs between surveillance effort and probability of detection for such programs. Dual-use deployment, where the biodetector provides some medically useful information in addition to bioterrorism surveillance, is discussed.
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